

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

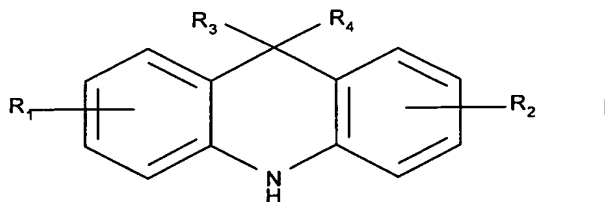
Claims 1-9, 11-19, 21, and 22 are pending in the application, with claims 1, 7, and 11 having been amended, claims 10 and 20 having been canceled, and new claims 21 and 22 having been added.

Claims 1, 10, 11, and 20 have been objected to because of the following informalities:
There should be a space between "to" and "C₂₀".

Claims 10 and 20 have been canceled. This error has been corrected in claims 1 and 11. An underline has been inserted to show the position of the space. Accordingly, it is requested that the objection be withdrawn.

Claims 1, 3, 4, and 7-10 have been rejected under 35 U.S.C. 102(b) as being anticipated by Wheeler et al. (U.S. Patent No. 5,268,394).

Wheeler et al. disclose the use of an acridans of Structure (I) as a stabilizer, preferably combined with hindered amine, phenolic, and phosphite stabilizers for stabilizing polyether polyols for polyurethane flexible foams and as stabilizers for the polyglycols, heat transfer fluids, and lubricating additives.



R₁, R₂, R₃, and R₄ can be H, C₁-C₁₈ alkyl, or C₇-C₁₈ aralkyl. R₃ and R₄ can also be aryl, preferably phenyl.

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Claims 1-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al. in view of Deetman (U.S. Patent No. RE37,101) in light of the evidence provided by Downs et al. (U.S. Patent No. 5,310,491).

Deetman discloses a fluid composition suitable for use as an aircraft hydraulic fluid. The fluid composition comprises a fire resistant phosphate ester base stock comprising between about 10% and about 100% by weight of a trialkyl phosphate, between about 0% and about 70% by weight of a dialkyl aryl phosphate, and from about 0% to about 25% by weight of an alkyl diaryl phosphate, with the proviso that the sum of the proportionate amount of each base stock component must equal 100%. The alkyl substituents of the trialkyl phosphate, the dialkyl aryl phosphate, and the alkyl diaryl phosphate contain between 3 and 8 carbon atoms and are bonded to the phosphate moiety via a primary carbon. The fluid composition further comprises an acid scavenger, an anti-erosion additive, a viscosity index improver, and an antioxidant. An additive combination comprises a high molecular weight butyl/hexyl methacrylate viscosity index improver, a perfluoroalkylsulfonate anti-erosion additive, a 3,4-epoxycyclohexanecarboxylate or a diepoxide acid scavenger, a di(alkylphenyl)amine, and a phenolic antioxidant comprising a mixture of a 2,4,6-trialkylphenol and a hindered polyphenol compound selected from the group consisting of bis(3,5-dialkyl-4-hydroxyaryl)methane, 1,3,5-trialkyl-2,4,6-tris(3,5-di-tert-butyl-4-hydroxyaryl)benzene and mixtures thereof. Preferably, the fluid composition further comprises a benzotriazole derivative as a copper corrosion inhibitor, and a 4,5-dihydroimidazole derivative, as an iron corrosion inhibitor and to enhance the stability of the fluid.

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Downs et al. disclose a lubricant composition containing the reaction product of an alkyl-substituted 1,2-dihydroquinoline and a diarylamine as antioxidant.

Claim 9 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al. in view of Emert et al. (U.S. Patent No. 5,498,809).

Emert et al. disclose oil soluble copolymers derived from ethylene and 1-butene which have a number average molecular weight between about 1,500 and 7,500, at least about 30 percent of all polymer chains terminated with ethylvinylidene groups, and ethylene-derived content of not greater than about 50 weight percent, and which form solutions in mineral oil free of polymer aggregates, as determined by light scattering measurements.

It is true that Wheeler et al. disclose that acridans can be used as lubricating additives. This has been acknowledged in the present specification. Wheeler et al. also disclose combining the acridans with certain amine stabilizers, phenolic stabilizers, and phosphite stabilizers. However, the patent teaches only the use of acridans that have been *separated* from the diphenylamine employed in their manufacture. The gist of the present invention lies in the discovery that such separation is unnecessary and that useful combinations of acridan and residual alkylated diphenylamine can be employed as stabilizers for lubricants without the manufacturing expense of separating them from the reaction mixture. The present claims have been re-worded to clarify and stress this point. First, one reacts a mixture of an excess of an alkylated diphenylamine with an aldehyde and a ketone. When all the aldehyde or ketone has been used up in the reaction, there will still be unreacted alkylated diphenylamine left. How much will be left can be predetermined and regulated by the amount of aldehyde or ketone added. It may be a lot or a little depending on the on the desired qualities of the final

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mixture. One can then use this mixture acridan and residual alkylated diphenylamine as is, without going to the manufacturing expense of separating the acridan and then adding additional antioxidants. Of course, additional stabilizers, e.g., antioxidants, can, if desired, be added to the unseparated acridan/alkylated composition, and, in fact, in a preferred embodiment, one or more amine antioxidants, which may be the same as or different from the residual diphenylamine of the composition, and/or hindered phenolic antioxidants are added. It is submitted that these alternatives are now clearly specified in the claims of the present application.

The primary reference, as noted above, fails to disclose or suggest the economically desirable benefit of the present invention, i.e., the ability to omit the separation step of the newly formed acridan and the residual alkylated diphenyl amine. On the contrary, Wheeler et al. teaches in column 4 that the crude reaction mixture, which contained diphenylamine, dimethylacridan, isopropyl diphenylamine, and dimers and trimers of various alkylated diphenyl amines was *carefully fractionally vacuum distilled*. Clearly, this procedure would add cost to the product, which, by virtue of the teaching of the present inventors, can now be avoided.

None of the secondary references supplement this deficiency of Wheeler et al. as a reference against the patentability of the present invention. Deetman merely discloses that numerous combinations of phenols and amines, one of many of which may be an acridan, can be used as antioxidants. Downs et al. disclose a reaction between a dihydroquinoline and diphenylamine - not the same reaction as that of the present invention - and teach the removal of excess diphenylamine by distillation. See column 5. Emert simply provides a long list of

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known antioxidants, many of which could, if desired, be added to the acridan/alkylated diphenylamine unseparated combination of the present invention. In no case, is there any hint of the non-separation procedure disclosed by the present inventors.

Accordingly, it is requested that the rejections of claims 1, 3, 4, and 7-10 under 35 U.S.C. 102(b) as being anticipated by Wheeler et al.; claims 1-20 under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al. in view of Deetman in light of the evidence provided by Downs et al.; and claim 9 under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al. in view of Emert et al. be withdrawn.

Indeed, it is noted that although the Examiner has taken the position that claims 1-20 are unpatentable under 35 U.S.C. 103(a) over Wheeler et al. in view of Deetman in light of the evidence provided by Downs et al., at no place in the Office Action have those references been specifically applied to the method claims, 11-20. Nothing has been said about them at all. In the absence of such specific application, it is assumed that these claims are patentable.

In view of the foregoing, it is submitted that this application is in condition for allowance and an early Office Action to that end is earnestly solicited.

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